

## Chapter 4

### **“The More Things Change, The More They Stay the Same:” Racial Inequality and the Moment of Lock-in**

*This chapter is the third of three central chapters in the book that outline the components of the lock-in model of inequality. In the first of these chapters (Chapter 2), I argued that racist exclusion during slavery and Jim Crow might usefully be understood as a form of anti-competitive conduct by white racial cartels to obtain an unfair material advantage. In the second (Chapter 3), I argued that this early unfair advantage for whites has become self-reinforcing, owing to structural feedback loops that parlay early material advantage into later advantage. In this last chapter of the three (Chapter 4), I argue that white self-reinforcing advantage may have now become locked in, because switching costs and start-up costs impede any move to close the racial gap.*

#### *Moving on Up?*

The conventional story we tell about race and slavery is a story of progress. Owing to economic growth and the civil rights movement, blacks have moved up from the poverty of slavery to the comfort of the middle-class in a relatively short period--about a hundred and fifty years. So the story goes. But how much of that story is actually true? What is the story that the statistics tell?

To be sure, the first part of the story, about the poverty of slavery, is backed up by the numbers. At the end of the Civil War, in 1865, black Americans owned only 0.5 percent of the total wealth of the country, despite the fact that they were approximately 14 percent of the population.<sup>1</sup> Not surprisingly, former slaves in the US did not own much wealth immediately after they were freed. Given that blacks had themselves been considered property until that time, the fact that they owned any wealth at all was nothing short of remarkable. Relative to their circumstances, the absolute amount of black wealth is impressive. Historians calculate that black-owned property totaled approximately \$50 million around 1860.<sup>2</sup>

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<sup>1</sup> In 1860, of the country's 31.4 million people, 4.4 million were African-American. U.S. Census.

<sup>2</sup> Claud Anderson, *Black Labor, White Wealth: The Search for Power and Economic Justice* (1994). In the late 1600s, before slavery had taken root as an institution, some free blacks had become landowners. Landownership formed the basis for black-owned wealth. In 1860 Dalton Conley, *Being Black, Living in the Red: Race, Wealth and Social Policy in America* (1999).

How far have we come since 1860? How much wealth do blacks own now? Reasonably, we might predict that black wealth has improved significantly, particularly given black economic, social and political progress over the last century. But in 1990, a full 135 years after emancipation, blacks owned only 1 percent of total wealth in the country, despite the fact that they were 12 percent of the population.<sup>3</sup> In light of the tremendous changes in race relations between now and the Civil War, the lack of material improvement in wealth is quite startling.

To be sure, black progress in wealth accumulation has been slow. But surely racial wealth differences have improved dramatically since the passage of the Civil Rights Act, haven't they? Unfortunately, the answer here is also no. In fact, racial disparities seemed to worsen in many urban areas after Congress enacted the civil rights laws. Census data for 1970 and 1980 reveals that black neighborhoods in Detroit containing the poorest third of the city's black population in 1950 and 1960 were even poorer in 1970 and 1980. The number of census tracts and residents living below the official poverty line doubled during the ten year period between 1970 and 1980.<sup>4</sup>

Indeed, the gap between black and white assets has grown steadily over the last fifty years.<sup>5</sup> Data on family income from 1968 to 1996 confirms that disadvantage reproduces itself in the next generation. A whopping 42 percent of blacks born to families in the bottom tenth of family income remained in that category in the next generation. In contrast, only 17 percent of

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<sup>3</sup> See Anderson, *Black Labor, White Wealth*, supra note 2 at p. x. In 2000, blacks were 34.6 million, out of a total population of 281.4 million people. U.S. Census.

<sup>4</sup> Thomas Sugrue, *The Origins of Urban Crisis: Race and Inequality in Postwar Detroit* 198–201(1998). Similarly, sociologists Robert Sampson and Jeffrey Morenoff have documented the durability of racialized poverty in Chicago neighborhoods after civil rights legislation. Sampson and Morenoff ranked the city's poorest neighborhoods, all of which were in black communities in the city's South and West sides. Those that were poorest in 1970 remained poorest in 1990, and their rank ordering remained virtually the same as well. Moreover, poverty increased most in those neighborhoods that were already at the bottom of the rankings. Neighborhoods with an increase in the number of Latinos also witnessed an increase in poverty as well. Robert J. Sampson and Jeffrey D. Morenoff, in *Durable Inequality: Spatial Dynamics, Social Processes and the Persistence of Poverty in Chicago Neighborhoods* in *Poverty Traps* 183-87 (Samuel Bowles, Steven Durlauf and Karla Hoff eds. 1994).

<sup>5</sup> See Conley, *Being Black, Living in the Red*, supra note 2 at p. 25.

white families in the bottom decile remained at the bottom in the next generation. The rags-to-riches Horatio Alger story is mostly a myth, but far more so for black families, who were half as likely to move from the bottom tenth to the top as whites.<sup>6</sup>

By most accounts then, racial inequality appears to be a permanent feature of the social and economic landscape. How might we explain racial inequality's durability? Is it possible that racial disparity has become structurally locked in, and that racial inequality would persist even if we were to eliminate intentional discrimination tomorrow? If so, what dynamic forces might have produced such lock-in? And what might the precise moment of racial lock-in look like, theoretically?

In this chapter, I will argue that white self-reinforcing advantage may have become structurally locked in because moving towards racial equality incurs such high costs that most people are not able or willing to pay. For example, significant racial differences in wealth bar entry by many poor people of color into wealthier white neighborhoods. Many whites are reluctant to move in the opposite direction because they would sacrifice access to good schools and job referral networks for their children. Non-whites also lack sufficient start-up capital—for example, the money to send their children to college or buy a house—in order to move out of poverty. These so-called switching and start-up costs may well have become so prohibitive that racial disparity is here to stay, at least for the foreseeable future.

In the following discussion, we will first draw from a wide range of literature to theoretically describe the moment of lock-in. Next, we will explore how lock-in might operate in the context of racial inequality, in housing, employment and education, among other areas, to cement in racial stratification. Finally, we will ask whether the civil rights laws enacted by Congress in the late 1960s might have come too late to reduce or eliminate racial disparity.

### *Durable Inequality: Some Theoretical Principles*

So what exactly is lock-in? We can draw on a number of definitions from a wide range of disciplines, including economics and complex systems theory. Economist Brian Arthur defines lock-in as the point at which an increasing returns market settles down into a particular configuration or market equilibrium. Markets with increasing returns are often characterized by multiple equilibria—a number of market outcomes, with competitors enjoying various market shares. The evolution of competition in multiple equilibria markets follows a typical pattern. After a period of initial instability, during which small historical events can dramatically affect market share, the market suddenly and definitively settles into one particular equilibrium from among several potential candidates. At this point—the point when the market can no longer shift

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<sup>6</sup> Thomas Hertz, *Rags to Riches: The Intergenerational Economic Mobility of Black and White Families in the US*, in *Unequal Chances: Family Background and Economic Success* (Samuel Bowles, Herbert Gintis and Melissa Osborne eds. 2004).

into a neighboring equilibrium without major perturbations—we say that the market has become locked in.<sup>7</sup>

The evolutionary history of typewriter keyboards competition concretely illustrates the dynamics of lock-in. Early in the market competition, the QWERTY keyboard format gained an advantage in a well-publicized typing competition, because the winner had used the QWERTY board. QWERTY's advantage then became self-reinforcing, because typists and employers each wanted to adopt the most popular keyboard, and each induced the other to buy.

At some key point in the market competition, QWERTY's initial advantage became virtually impossible to dislodge.<sup>8</sup> Once QWERTY had become sufficiently popular, typists and employers were no longer willing to switch to an alternative keyboard, mostly because they would lose the competitive advantage of their connection to each other. This key transition point may well have been the moment when the industry adopted QWERTY as the industry standard.

So what do we know about the dynamics of lock-in? Lock-in is a particular historical event on the evolutionary time line, a precise moment that produces some very distinct and dramatic changes. The Polya urn model (from mathematics) can help us to visualize this moment, and to understand the role that time and history play. Recall from Chapter 3 that in the Polya urn model, an urn is initially filled with two balls, one red and one white. In the “standard Polya process,” a ball is sampled from the urn, and then replaced together with an additional ball of the same color as the ball drawn. If the draw produces a red ball, that ball goes back into the urn, together with another red ball. Same goes for white. Draws and replacements continue an infinite number of times. In the standard Polya process, the probability that each ball drawn is of a particular color is exactly equal to the proportion of existing balls in the urn of that color.

Early during the process, the proportion of the balls in the urn begins to “tip” predominantly toward one color or the other. A short time after the tipping point, the process suddenly and dramatically settles down to some fixed and quite durable proportion of red and white balls.

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<sup>7</sup> W. Brian Arthur, *Increasing Returns and Path Dependence in the Economy* 21, 29, 115-117 (1994).

<sup>8</sup> Paul A. David, *Clio and the Economics of QWERTY*, 75 *Amer. Econ. Rev. Proc.* 332 (1985). See also Paul A. David, *Understanding the Economics of QWERTY: the Necessity of History in Economic History and the Modern Economist* (William N. Parker ed. 1986) (responding to the Liebowitz and Margolis critique).

In the standard process, that proportion varies each time we run the process. So during the first series of draws, the process might settle into a proportion of 22 percent red balls. On a subsequent run, that proportion might end up at 78 percent red. In fact, in multiple runs, the eventual lock-in point might randomly end up anywhere between 0 percent red balls on one end of the spectrum and 0 percent white balls on the other end!<sup>9</sup>

Remarkably, and perhaps counter-intuitively, each time we run the process, the urn settles into an unchanging proportion at right around the same point in time, fairly early on. A graph of multiple runs in Figure 1 shows this phenomenon. Notice that in each run, the proportion of red to white balls levels off quite dramatically, just after a period of some fairly chaotic movement back and forth among various proportions. Notice also how that proportion becomes increasingly stable, represented by a progressively smoother line.

### **Insert Figure 1**

This dramatic leveling off point in each run—the point at which the distribution settles down and becomes relatively unchanging-- is the lock-in point. Importantly, draws after the point of lock-in do not change the distribution appreciably. As the urn fills with a greater number of balls, each draw makes less and less difference to the overall proportion.<sup>10</sup> What is perhaps most remarkable about the lock-in point is the suddenness with which it appears. This dramatic change in state resembles phase transitions in physical systems, like the boiling of water, where the addition of just a small amount of heat changes the state of the water. We will say more about this quality later in our discussion.

Many every-day processes exhibit lock-in. On a college campus, pedestrian traffic across a grassy quad cuts grooves to create a particular pathway. The pathway is self-reinforcing—each time someone uses the pathway, she reinforces that groove, which makes it more likely that the next person will follow that same path. Lock-in occurs when the likelihood that someone will travel using an alternate pathway drops dramatically. Likewise, in learning, paths of nerve cells (called Hebbian neural pathways) display lock-in. Each time nerve cells in a particular sequence

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<sup>9</sup> Arthur uses the Polya urn mathematical model to explain the concept of lock-in. See Arthur, *Increasing Returns and Path Dependence*, 36-38. As Arthur notes, the Polya urn model is too restrictive for most types of path-dependence and lock-in. The model is particularly restrictive because it requires that the probability of a particular on subsequent draws be exactly equal to the proportion of the balls of that color already contained in the urn. For most path-dependent processes, the likelihood of subsequent events operates as a more general function of past events—the probability of adding a red ball is a function of the proportion of red balls already in the urn. Arthur and his colleagues have developed alternative mathematical models to expand the application of the Polya model, and have adapted their model to accommodate more than one color and probability functions that change over time. See *id.* at 38.

<sup>10</sup> See *id.*

fire, cellular changes occur that make each cell more likely to fire along the same pathway the next time the organism is presented with the same stimulus.<sup>11</sup> Lock-in occurs when the probability of producing a new response drops dramatically. After this point, changing pathways—literally, in the case of both foot traffic and Hebbian neural pathways—becomes dramatically harder.

So in a system with self-reinforcing advantage, what is happening at the moment the system locks into one path and not another? Some recent work suggests that lock-in occurs when the costs of moving to another path have become too high. We can categorize the kind of costs that generate lock-in as falling into two basic categories: start-up costs and switching costs. Consider each in turn.

Start-up costs are those up-front costs necessary to jump start a process in order for it to take off and grow—“accelerating growth,” as they call it. Start-up costs can prevent a competitor from getting a sufficient jump-start so that self-sustaining growth will help the competitor to close the gap with the market leader.

Start-up costs appear to play an important role in explaining why companies, neighborhoods or even countries cannot trigger self-sustaining growth, even when they receive some level of development assistance. Scholars working in economic development argue that developing countries might remain poor even when they are getting aid because they are caught in a “poverty trap.”<sup>12</sup> Countries become trapped when they fail to generate the minimum level of inputs to growth—a minimum capital to labor ratio, a minimum level of infrastructure and the like—to be able to trigger growth. When assets sink to some point below a critical threshold—sometimes called the Micawber threshold, after the eternally destitute (but forever cheery) character in the Dickens novel *David Copperfield*—the country is unable to pull itself out of the hole.

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<sup>11</sup> D. O. Hebb, *The Organization of Behavior: A Neuropsychological Theory* (1949). Pinpointing the precise changes to the cell or the connections between the cell that make the neurons more likely to fire has proved elusive. See Robert A. Malenka and Roger C. Nicoll, *Long-Term Potentiation: A Decade of Progress?* 285 *Science* 1870, 1870-71 (1993).

<sup>12</sup> See Costas Azariadis, *The Economics of Poverty Traps, Part One: Complete Markets*, 1 *J. Econ. Growth* 449 (1996); *Poverty Traps* (Bowles, Durlauf, Hoff eds. 2006). For an excellent discussion of poverty traps in Africa that spring from a variety of sources, see Jeffrey Sachs, *Africa's Special Needs* in *Investing in Development: A Practical Plan to Achieve Millennium Development Goals*, UN Millennium Development Project 148 (UNDP 2005).

Countries trapped in poverty are not able to withstand ordinary economic shocks, like drought or crop failure.<sup>13</sup> What's worse, sometimes the flight of capital from a high-poverty country triggers further disinvestment, and self-reinforcing feedback loops then trigger a spiral of deterioration. Complex systems theory sometimes refers to this phenomenon as a basin of attraction (much like a sink basin with an attractive equilibrium point at the bottom). The basin has a critical threshold beyond which an agent must move in order to escape the gravitational pull of the basin. If the country does not escape the event horizon (which is the Micawber threshold), then it goes down the drain, so to speak, coming to rest at an even lower poverty equilibrium. Research on South Africa, for example, identifies the Micawber threshold at twice the poverty line income, and a poverty equilibrium at the bottom of the basin around 90 percent of the poverty line income.<sup>14</sup>

Switching costs can also play a very important role in generating lock-in. Switching costs are defined as the costs consumers pay to switch from one technological innovation or supplier to another.<sup>15</sup> A consumer faces a switching cost when the consumer will lose an investment specific to his current seller in the move to a new seller. In the world of technology markets, where network connections are quite important, switching costs might explain why competitors who come late to the competition are unable to catch up. Namely, consumers are not willing to lose their product-specific investment to make the switch.

In increasing returns markets, the switching costs associated with lock-in can come from several sources. First, switching consumers might lose their horizontal network connection with other users. So for example the consumer who switches from Word to Word Perfect loses connection or interface with other users—other word processors, or prospective employers—in the switch.

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<sup>13</sup> The African country of Niger fits this description. Despite the fact that Niger has democratized and shifted to a market-driven economy, and despite having received significant foreign aid, Niger has been unable to weather its food crisis, caused by locusts and insufficient rains, with corresponding crop failure for the last several years. See Lydia Polgreen, *A New Face of Hunger, Without Old Excuses*, *The New York Times*, July 31, 2005.

<sup>14</sup> For a very readable description of basins of attractions in physical systems, see Martin Scheffer, Steven Carpenter, Jonathan Foley, Carl Folke and Brian Walker, *Catastrophic Shifts in Ecosystems*, 413 *Nature* 591, 591 (2001). The South Africa research argues that South Africa's growth problems are caused in large part by self-reinforcing feedback loops that are not available to the majority of the country's poor—social networks. Michelle Adato, Michael R. Carter and Julian May, *Exploring Poverty Traps and Social Exclusion in South Africa*, 42 *J. of Development Studies* 226-247(2006).

<sup>15</sup> Joseph Farrell and Paul Klemperer, *Coordination and Lock-in: Competition with Switching Costs and Network Effects* (unpublished manuscript on file, 2006) at p. 12.

Second, switching consumers might lose the benefits that the market leader has enjoyed just by virtue of having spent time out in front. For example, switching consumers might lose the benefit of additional development and refinement that inures to the first mover's product. Or switching consumers might have to re-learn or retrain, losing the benefit from sunk costs. Brian Arthur and others have argued that civilian light-water cooled nuclear reactors benefitted from additional research and development on the reactor as the most popular reactor on the market (owing to its use by the Navy for submarines). Although heavy-water cooled or gas-cooled reactors might have been more efficient in the long-term for civilian reactors, switching technologies at this point would entail losing the benefit of additional research and development on light-water cooled reactors.<sup>16</sup>

In some technology markets, we can specify switching costs quite easily. In the typewriter keyboard competition, for example, consumers switching to a potentially more innovative product would have had to pay the cost of retraining on a new keyboard.<sup>17</sup> Moreover, in the absence of a coordinated move by all employers and typists to the new keyboard, consumers would also have had to incur horizontal network losses. The first employers to switch would have had to pay the highest price, having virtually no available labor pool of trained typists to hire from. Likewise, new typists (especially the pioneers) who trained on the less popular keyboard would have had fewer job opportunities during the transition period.<sup>18</sup>

Both switching and start-up costs help to explain the sudden and dramatic change we see at the point of lock-in. Complex systems frequently exhibit critical thresholds--key moments of transformation when a system suddenly shifts all at once. Water boils when it reaches a critical temperature because it has absorbed enough energy to move to a different phase. A network suddenly hangs together when the number of connections reaches a critical density, because it has the requisite number of connections to "start-up" information transmission. In the context of path-dependence, the moment of lock-in also exhibits this unexpected quality. Technology

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<sup>16</sup> See W. Brian Arthur, Positive Feedbacks in the Economy, in Path Dependence and Increasing Returns, *supra* note 7.

<sup>17</sup> Paul David argues that the Dvorak Simplified Keyboard (DSK) is a more efficient format, but was unable to gain more than a small foothold in the market because of switching costs. See Paul A. David, CLIO and the Economics of QWERTY, *supra* note 8 at x; Paul A. David, Understanding the Economics of QWERTY, *supra* note x at x. Liebowitz and Margolis challenge the evidence that DSK was in fact more efficient. See Stan J. Liebowitz and Stephen E. Margolis, The Fable of the Keys, 33 J. Law and Econ. 1 (date). Even if DSK was not in fact a more efficient keyboard, theoretically it remains possible that other alternative keyboards would be foreclosed from the market because of switching costs.

<sup>18</sup> For a much more technical description of switching costs in the context of QWERTY, see Paul A. David, CLIO and the Economics of QWERTY, *supra* note 7 at x; Paul A. David, Understanding the Economics of QWERTY, *supra* note 7 at x.



markets suddenly become standardized. Developing countries become trapped in poverty overnight. Once the markets or countries have shifted, however, they stay locked in to the new state for long periods of time.

### *In A Fix: Racial Inequality and Lock-In*

So how might lock-in operate in our model of racial inequality? We can make a couple of very general observations up front. First, lock-in theory demonstrates why racial disparity may now be fixed and unchanging. We may well have passed an important critical threshold, after which current racial distributions of wealth and opportunity are far less likely to change over time.

Second, whites may not have had to do all that much in the way of intentional discrimination to lock in racial inequality. Here again, the Polya urn model proves helpful to illustrate the point. Remember that in that model, the early random draws from the urn determine which of the two or more “competing” colors likely will come to dominate the urn. Imagine now that, instead of sampling balls at random, the person drawing from the Polya urn intentionally manipulates the process (via a legal rule, perhaps) so that she consistently draws red balls at the beginning, before reverting to random draws. In the wake of consistent early manipulation, the urn will lock in to a proportion of predominantly red balls, perhaps at an even earlier point than an unmanipulated run. Polya mathematics suggest that it wouldn’t take all that much manipulation to lock in one color or the other. Likewise, whites might not have needed to do all that much to lock in relatively unfavorable positions of whites and non-whites.

So what role do start-up and switching costs play in the lock-in of racial inequality? As with developing countries, start-up costs may play an important role, particularly for those feedback loops that transmit racial inequality from generation to generation, vertically so to speak. Start up costs might explain why neighborhoods that are historically segregated do not grow, even when they get assistance. In this context, we can understand start-up costs as the amount of capital needed to trigger growth for a neighborhood or community (or even, in some cases, a metropolitan area, like East St. Louis, which is predominantly black). Owing to discrimination, non-white neighborhoods might have fallen well below the Micawber point, without the minimum level of inputs to growth they needed to jump start economic growth.<sup>19</sup>

What’s more, neighborhood deterioration might be self-reinforcing.<sup>20</sup> As William Julius Wilson has argued, the flight from poor non-white neighborhoods of those who are least poor can

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<sup>19</sup> Durlauf and Culture...

<sup>20</sup> Sampson and Morenoff also make this argument, but they trace the self-reinforcing effects of neighborhood composition primarily to behavior and culture, and less to the structural forces on which international models focus. See Sampson and Morenoff, *Durable Inequality*, supra note 4 at 176, 189-90.

create even poorer neighborhoods that are progressively less able to withstand economic shocks.<sup>21</sup> Those neighborhoods left behind are the poorest of the poor, locked-in at a level far below the poverty line. Failing to escape the event horizon, they have gone down the drain.

Moving from neighborhood to family, start-up costs can help to explain why successive generations of families cannot escape poverty. Here, start-up costs can represent the family capital needed to launch a child into the world who will sustain herself economically. According to the literature on wealth mobility, education appears critical to getting started on a path towards “expanding family assets.” College education, in particular, seems to be the key factor that permits a person’s wealth and income to take off in a big way.<sup>22</sup> Accordingly, families looking to escape poverty must have enough money to send their children to college.

Economist Michele Boldrin has explored the importance of start up costs and lock-in in connection with public education financing.<sup>23</sup> Boldrin has studied the long-run evolution of per-capita income when economic growth is tied to the accumulation of human capital. Boldrin’s model examines the feedback loop connections between economic growth, political decision making and investment in public education. In this model, families become “trapped” or locked into poverty when they do not have sufficient initial income to invest in education.

The model illustrates that a society can become locked in one of two equilibria in terms of economic growth, depending on initial income conditions. In one evolutionary path, if income falls below the critical threshold, the model produces a poverty trap, in which societies invest too little in education. In the other equilibria, where initial resources exceed the critical threshold,

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<sup>21</sup> See William Julius Wilson, *The Truly Disadvantaged: The Inner-City, the Underclass and Public Policy* (1987). Douglas Massey and Mitchell Eggers have challenged Wilson’s hypothesis, with empirical data indicating little correlation between the increases in segregation based on class and increased isolation of non-white neighborhoods. Douglas Massey and Mitchell Eggers, *The Ecology of Inequality: Minorities and the Concentration of Poverty, 1970-1980*, 95 *Amer. J. Sociol.* 1153 (1990). Wilson has responded that because non-poor blacks often move into neighborhoods with smaller but still significant levels of poverty, the indices for inter-class segregation are not sufficiently informative about the impact on the neighborhood left behind. William Julius Wilson, *Studying Inner-City Dislocations: The Challenge of Public Agenda Research*, 56 *Amer. J. Sociol.* 1 (1991).

<sup>22</sup> Although the wage differential between college graduates and those with a high school degree fell during the 1970s, during the 1990s the gap soared to nearly eighty percent and remains currently very high. Robert Topel, *Factor Proportions and Relative Wages: The Supply Side Determinants of Wage Inequality*, 11 *J. Econ Persp.* 55, 58 (1997).

<sup>23</sup> Michele Boldrin, *Public Education and Capital Accumulation*, 59 *Research in Economics* 85, \_\_\_\_ (2005). Boldrin argues that public financing solves a free-rider problem in economies in which markets for financing educational investment are incomplete.

the model exhibits accelerated economic growth, because individuals have sufficient start-up capital to invest in schooling. Although Boldrin does not model the racial parameters of this process, we can hypothesize that racial discrimination might be the source of the initial income differences. Again, if individual income falls below some key threshold owing to discrimination, communities can fall into poverty traps because they cannot invest in schooling.

Switching costs are more likely to play a role in economic feedback loops that are connected to networks—networks of neighbors, workers or employers, for example. In network sorts of circumstances, those agents who want to switch to more racially and economically inclusive practices will have to pay significant costs to make that switch.

So for example, because of network relationships between neighbors, non-whites are likely to have to pay very high switching costs to move to white or mixed neighborhoods. In particular, rent differentials can lock the poor into economically segregated neighborhoods.<sup>24</sup>

Recall that whites will have benefitted from living in a neighborhood with better schools, wealthier neighbors and better job networks. Conversely, non-whites will have not have benefitted, or worse, will have been affirmatively disadvantaged. Accordingly, non-whites will now face significant switching costs in moving to a wealthier, white neighborhood. First, they will have less wealth than whites with which to move, owing to their cumulative associational disadvantages.<sup>25</sup> Second, non-whites will have to pay higher prices because property values in wealthier white neighborhoods will reflect the associational benefits—wealthier neighbors, better public schools, better job networks—in that neighborhood.<sup>26</sup>

Switching costs of this kind could not really lock poverty in without zoning laws. In unrestricted areas, developers likely would choose to include some low-income multi-family housing in a neighborhood, opening the doors to non-white residents. But whites have passed exclusionary ordinances, in large part to preserve their property values and reduce their tax burdens.<sup>27</sup>

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<sup>24</sup> Roland Benabou, *Equity and Efficiency in Human Capital Investment: The Local Connection*, 63 *Rev. Econ. Studies* 237 (1996).

<sup>25</sup> Because capital markets are imperfect, differences in wealth will pose significant obstacles for poorer non-whites to switch neighborhoods. See Michael H. Schill and Susan M. Wachter, *Housing Market Constraints and Spatial Stratification by Income and Race*, 6 *Housing Policy Debate* 141, 146 (1995).

<sup>26</sup> See Benabou, *Equity and Efficiency*, *supra* note 24 at x.

<sup>27</sup> See Schill and Wachter, *Market Constraints*, *supra* note 25 at 144-45. In addition, zoning regulations increase the value of property in white neighborhoods (by lowering tax burdens associated with the area) and increases the rents that non-whites will pay in areas zoned

Non-whites aren't the only ones to pay switching costs. Even those whites who are committed to the idea of integration might also be locked into their white neighborhoods. Given differences in neighborhood wealth, families who voluntarily integrate will pay to switch. Namely, they risk losing access to well-funded schools, better job networks and wealthier neighbors. In addition, if they move into a neighborhood that is tipping even further towards non-white residents, they risk losing on the property value of their house, which will fall as the neighborhood becomes progressively poorer and more non-white.<sup>28</sup>

As it turns out, those prospective renters and home buyers who are most likely to be able to manage the switch include the so-called "cultural creatives"—artists, young professionals, empty nesters and gay and lesbian couples without children. These folks are relatively more able to pay the switching costs associated with neighborhood effects because they are less tied to public schools and network contacts for children.<sup>29</sup> But for white families with children, buying into a relatively lower-income, integrated or non-white neighborhood can mean sacrificing in terms of school quality and neighborhood connections.

Most troubling, once the process has become locked in, reversing the direction of time's arrow may be impossible. Even with the best of material incentives, switching to racially and economically diverse neighborhoods has proved difficult. Programs to revitalize poor neighborhoods of color have triggered gentrification, which replaces poor residents of color with wealthier white ones. Because the entry of wealthier families drives up local property values, existing residents are often priced out of the market, particularly when the neighborhood has a high percentage of rental property. Rising rents, increased property taxes and a spike in unfair evictions kicks out old residents and prevents future low-income residents from moving in.<sup>30</sup> Thus, owing to the arrow of time, dismantling neighborhood lock-in becomes as challenging as putting spilled milk back into the glass.

Structural switching costs can also lock in racial disparity when a variety of bureaucratic and economic structures have grown up around racial disparity. Often in evolution, other parts of the ecological network co-evolve in response to the entry of a new species, and the entire system becomes more stable. Likewise, bureaucratic and economic structures can co-evolve with racially disparate practices to lock in those bad practices. For example, law school admissions rely pretty heavily on the use of the Law School Admissions Test, which disproportionately

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for multi-family housing (by artificially diminishing supply). See *id.*

<sup>28</sup> See W. Brian Arthur, *Increasing Returns*, *supra* note 7 at p. 10.

<sup>29</sup> Brian J.L. Berry, *Islands of Renewal in Seas of Decay* in *The New Urban Reality* (Peterson ed. 1985).

<sup>30</sup> Peter Marcuse, *Gentrification, Abandonment and Displacement: Connections, Causes and Policy Responses*, 28 *J. Urban Contemp. Law* 206-07 (19\_\_).

excludes students of color. (Given the history of standardized tests, which were explicitly designed to exclude on the basis of ethnicity and race, we should not find it altogether surprising that they continue to do so).<sup>31</sup>

A network of bureaucratic and organizational practices has now grown up around law schools' use of the LSAT. For example, the Law School Admissions Council (LSAC) was created to supervise the drafting and administration of the LSAT for all law schools, to collect and distribute LSAT scores to all law schools, and to give all law schools direct computer access to applicant information. Law school rankings (and in turn alumni donations and law firm interest in hiring graduates) are also structurally tied on the use of the LSAT. A full twenty-five percent of U.S. News and World report rankings comes from LSAT performance.<sup>32</sup>

As part of this ecological network, any law school choosing to use some standardized test other than the LSAT would have to pay significant some switching. First, the school would lose use of the LSAC administrative network to collect and distribute information. These costs could potentially include: (i) the cost to construct an alternative test and conduct quality control; (ii) the cost to validate the test, made far more difficult by the limited number of applicants taking the test at one school; (iii) the cost to monitor and improve the test over time; and (iv) the cost to administer the test to applicants all over the country.<sup>33</sup> In the same vein, the school also would likely lose significant numbers of applicants, because students would be unwilling to take more than one test as part of the application process.

Second, and perhaps of most concern to the school, switching would also sacrifice network reputation benefits connected to law school rankings. In particular, the school would lose the ability to signal to U.S. News and World Report the quality of their student applicant pool. In the absence of data on LSAT selectivity, the law school's ranking likely would fall, thereby threatening alumni donations, employer willingness to hire graduates and a number of other "network goods" connected to a law school's status in the rankings.<sup>34</sup> Thus, as is true in development, early loss could generate later loss (and a trip down the drain).

Third, and most controversially, a switching school might also lose the ability to efficiently select "top" students. Given the LSAT's long-standing monopoly in the field, and all

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<sup>31</sup> See Daria Roithmayr, Barriers to Entry: 86 Va. L. Rev. 727, 776-78 (2000).

<sup>32</sup> Cite to US News Formula.

<sup>33</sup> Willis Reese, The Standard Law School Admission Test, 1 J. Legal Ed. 124, 124-25 (1948).

<sup>34</sup> See Daria Roithmayr, Barriers to Entry, *supra* note 31.

the research the LSAC has done on the LSAT, law schools might be hard pressed to find a measurement instrument as predictive of first-year law school performance as the LSAT. (This is true despite the fact that the LSAT is a pretty lousy predictor of first year grades.)<sup>35</sup>

Racialized poverty traps are potentially quite bad on the whole, but particularly so for the U.S. economy. Locked in market in general are potentially pretty inefficient. When dynamic forces lock the market into a particular technology, other potentially more innovative technologies might not come to market.<sup>36</sup> Likewise, inequality tends to limit economic growth<sup>37</sup> Despite the demands of a global economy, public education and current employment practices have not yet begun to fill particular sectors of labor demand, locked in as they are to practices that under-educate and under-employ a significant portion of the labor pool. Perhaps because of high switching costs, private industry seems to find it easier to import labor for high-tech industries from other countries like India.<sup>38</sup> In the year 2050, the U.S. population (and

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<sup>35</sup> The correlation co-efficient of the LSAT to first year grade averages is roughly .39, which means that the LSAT explains approximately 16 percent of the variation in first-year grades. This coefficient is substantially lower for LSAT scores in the 25<sup>th</sup> percentile (.34) than for 50<sup>th</sup> (.40) or 75<sup>th</sup> (.44). Predictive Validity of the LSAT: A National Summary of the 1999-2000 Correlation Studies, LSAC Research Report Series, Technical Report 01-02 5 (December 2005). Lest this cost of lost predictive ability assume too much importance, recall from Chapter 2 that the choice of what qualities are important in law students and in the legal profession was itself produced, at least at the outset, by exclusively white men in the legal market.

<sup>36</sup> See Paul David, *Clio and the Economics of QWERTY*, supra note 8. Stan Liebowitz and Stephen Margolis have challenged David's account of QWERTY, arguing both that as an empirical matter, alternative keyboards were not more innovative than the Sholes' board, and that, because of network externalities, the Sholes' technology is (all things considered) more efficient. See Stan J. Liebowitz and Stephen E. Margolis, *The Fable of the Keys*, 33 J. Law and Econ. 1 (date). See also Stan J. Liebowitz and Stephen E. Margolis, *Path Dependence, Lock-in and History*, 11 J. Law, Econ. and Org. 205 (1995). David has responded that, independent of network effects, Sholes is less technologically innovative, and that had alternative keyboards been able to enter the market, typists would have adopted more innovative keyboards like the Dvorak format. See Paul A. David, *Understanding the Economics of QWERTY: the Necessity of History in Economic History and the Modern Economist* (William N. Parker ed. 1986) (responding to the Liebowitz and Margolis critique)..

<sup>37</sup> Stanley L. Engerman and Kenneth L. Sokoloff, *Factor Endowments, Institutions and Differential Paths of Growth among New World Economies: A View from Economic Historians of the United States*, in *How Latin America Fell Behind: Essays on the Economic Histories of Brazil and Mexico, 1800-1914* (1997).

<sup>38</sup> Beginning in the 1990s, companies have turned to India and Eastern Europe for high-skill labor, motivated largely by the lack of skilled labor here in the U.S., and only secondarily by

correspondingly the workforce) will be nearly half non-white—whites will constitute only 53 percent of the population, according to Census projections.<sup>39</sup> Underutilized labor will likely become even more of an issue, as the demographic wave of Baby Boomers leaves the labor market, and as the workforce ages.<sup>40</sup> In short, locked-in inequality is potentially very bad for business.

### *Race, Class and the Role of Law*

So what role does law play in lock-in? More concretely, why didn't the civil rights legislation of the mid-1960s do more to reduce racial disparities in employment (with Title VII), housing (Title VIII) and education (Title VI)? To answer this question, we must first understand a bit more about how law, race and class interact with each other to produce lock-in.

Lock-in takes place in basically two stages—the first overtly racial and the second driven by class. Recall that the moment of lock-in in the Polya urn is the moment that the distribution of balls settles down to an unchanging distribution. Before this point, even slight manipulation of the sampling process for two or three draws makes a big difference in distribution. But after the event of lock-in, manipulation makes far less difference.

In the lock-in model of racial inequality, then, we can say that intentional racist manipulations of the market early on served to push the market towards an equilibrium quite favorable to whites. These historical events dominated the framework at the outset. But if racial inequality has become locked in, then the process will no longer be sensitive to manipulation or historical events. The impact of these historical fluctuations or movements die away, leaving the process to be shaped by conventional market and class forces.

We can visualize this two-stage, “race followed by class” evolution in the modern housing market. As Chapter 2 discusses, the modern housing market has existed only since the 1930s, when government re-designed the mortgage lending industry in order to facilitate home ownership after the financial collapse of the 1930s.<sup>41</sup> From the beginning of this re-designed

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a desire to cut personnel costs. See Werner Kobitzsch, Dieter Rombach and Raimund Feldmann, *Outsourcing in India*, 18 *IEEE Software* 78, 81-85 (2001).

<sup>39</sup> See *id.* at pp. 161-162.

<sup>40</sup> Dennis A. Ahlburg, *The Census Bureau's New Projections of the US Population*, 19 *Population and Development Review* 159, 162 (1993).

<sup>41</sup> In particular, the federal government created the Federal Housing Administration and the Home Owners Loan Corporation in 1933-34 to reduce rates of foreclosure, insure risks to private lenders and systematize the mortgage assessment process. See Chapter 2.

market, however, whites manipulated the market to favor themselves.<sup>42</sup> Had legal prohibition against housing discrimination been passed during this period in the 1930s, to outlaw these and other exclusionary activities, they might well have had some important effect.

But Congress did not pass the Fair Housing Act until 30 years later, in 1968. At that point, the damage from historical segregation might already have been done. That is, segregation might already have settled the market into a particular distributions of housing that divided cities up by race and class. Fair housing legislation might have had little effect on housing segregation, if conventional class-based processes—those based on transfers via families, neighborhoods, networks and workplaces-- had already taken over the work of intentional discrimination.

Statistics on levels of racial segregation after 1968 are consistent with the possibility of lock-in. Among the twelve most segregated cities in the U.S., the average segregation index fell only slightly from 1970 to 1990, going from 83 to 75, and black isolation indices hardly changed during that period. Moreover, the level of segregation at the level of municipalities increased dramatically in the same period, going from 35 to 49 in those twenty years.<sup>43</sup>

These most segregated areas again experienced very small declines in segregation from 1990 to 2000, but some evidence indicates that segregation for Latinos increased at the same time.<sup>44</sup> To be sure, we cannot say with any certainty that lock-in had occurred by 1968. These statistics might be explained by continuing intentional discrimination, for example. But the available evidence is consistent with a theory of lock-in.

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<sup>42</sup> Discrimination in underwriting and lending—redlining and the aggressive promotion of racially restrictive covenants by white home buyers—created a dual housing market that disadvantaged non-white competitors. Violence against black home buyers, prospective and actual, kept many neighborhoods from integrating. Municipalities passed zoning laws that prohibited multi-family housing and other forms of affordable housing for low-income people of color. Government programs constructed public housing projects in segregated predominantly black neighborhoods. See Douglas Massey and Nancy Denton, *American Apartheid: Segregation and the Making of the Underclass* (1998).

<sup>43</sup> Douglas Massey, Residential Segregation and Neighborhood Conditions in US Metropolitan Areas, in *America Becoming: Racial Trends and Their Consequences* 398 (Smelser, Wilson, Mitchell eds. 2001)

<sup>44</sup> Data from the 2000 census indicates that overall residential segregation for blacks fell again in the decade from 1990 to 2000, but recent research indicates that segregation for Latinos has increased in the years since the 2000 census. U.S. Census Bureau, *Residential Segregation of Blacks or African Americans and Residential Segregation of Hispanics or Latinos: 1980 to 2000* (Chapters 5 and 6). Segregation for blacks in 6 of the 10 most highly segregated cities fell by only four points or less between 1980 and 2000. Lewis Mumford Center, *Ethnic Diversity Grows, Neighborhood Integration Lags Behind*, April 3, 2001.



## *The Big Push and Shock Therapy: Escaping Lock-In*

So is it possible to exit lock-in? After all, lock-in is not forever. Even in a locked-in state, a complex system is in a state of dynamic flux. Agents are mutating. The environment is changing as well. But in a state lock-in, most of those changes will produce little movement. To shake things loose, change likely must be on a grand scale—a political or technological revolution, for example.

The next chapter will explore in far more detail specific potential remedies for shaking loose racial inequality. But some general points about exiting lock-in can be made here. First, the strategy for dismantling lock-in likely will depend on the source of lock-in, and on whether the costs are reversible or transferable to another pathway or option.<sup>45</sup>

If start-up costs are the source of lock-in, dismantling lock-in could be quite costly. In the marketplace, subsidies might appear to be one way of getting rid of lock-in (although scholars point out that subsidies can create a new set of problems.)<sup>46</sup> Likewise, in racial markets, dismantling wealth differences could be very costly. To equalize wealth levels, policymakers would have to find some way to increase non-white wealth by seven or eightfold. Targeted subsidies—subsidies for college educations or for down payments on homes—might help to generate important start-up capital. But relative to white advantage, non-whites may have started too far behind to close the gap.

Alternatively, if lock-in can be traced to switching costs, policymakers or government might be able to coordinate switching so as to reduce those costs. This is particularly true for network related switching costs. For example, in switching from QWERTY to some other (presumably more efficient) keyboard, consumers could negotiate a coordinated changeover en masse to reduce or eliminate switching costs. Even in the absence of a central standardizing authority of some sort (which could mandate the switch), a coordinated switch could occur if individual agents were certain that other agents would switch.<sup>47</sup>

Likewise, law schools wanting to adopt a more inclusive standardized admissions test (or better yet, wanting to abandon use of the test altogether) might coordinate via the Law School Admissions Council to make the switch as a group. After the switch, the LSAC could continue to administer and collect candidate information, but now with an alternative test or with no test at all. Without coordination, no school can afford to make the switch.

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<sup>45</sup> Brian Arthur, *Self Reinforcing Mechanisms in Economics*, in *Increasing Returns and Path Dependence in the Economy* 118-19 (1994).

<sup>46</sup> Arthur, Krugman, add cites.

<sup>47</sup> Joseph Farrell and Garth Saloner, *Standardization, Compatibility and Innovation*, 16 *Rand J. Econ.* 70, \_\_\_\_ (1985).

*Timing is Everything and Yes, Size Matters*

We can make two other general points about dismantling lock-in. First, because lock-in exhibits features of a critical threshold, size matters. In physical systems, injecting a massive amount of outside energy—a process called annealing—can potentially shake a system loose from its locked in state.<sup>48</sup> In evolution, some large-scale event (hurricanes, meteors, earthquakes) can disrupt a locked-in ecological web.<sup>49</sup>

Similarly, those who believe in the need for a “big push” in economic development have argued that developing countries need massive infusions of aid, to jump start economic growth past the Micawber point.<sup>50</sup> In eco-systems (and in swimming pools), “shock therapy” is necessary to push bodies of water back below some critical threshold to transform the water from cloudy to clear.<sup>51</sup>

Similarly, we might need shock therapy or a “big push” to jump-start growth for communities that were unfairly excluded from the competition early on. Undoing cumulative disparity might require a sufficiently radical intervention to offset the compound effects of any differences.<sup>52</sup>

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<sup>48</sup> For an interesting example using simulated annealing to shake up political representation, see Ken Kollman, John H. Miller and Scott E. Page, *Political Institutions and Sorting in a Tiebout Model*, 87 *Amer. Econ. Rev.* 977 (1997).

<sup>49</sup> See Martin Scheffer, Steven Carpenter, Jonathan Foley, Carl Folke and Brian Walker, *Catastrophic Shifts in Ecosystems*, 413 *Nature* 591, 591 (2001).

<sup>50</sup> The earliest formulation of “big push” theory comes from Paul Rosenstein-Rodan, *Problems of Industrialization of Eastern and South-Eastern Europe*, 53 *Econ. J.* 202 (1943). More recent work incorporating much of Rosenstein-Rodan’s work includes Kevin M. Murphy, Andrei Shleifer and Robert W. Vishny, *Industrialization and the Big Push*, *J. Political Economy* 1003 (1989). These authors argue that developing countries can move past critical thresholds by first aggressively expanding industrial production, which increases wages. In turn, increased wages produce increased demand, which then justifies (and triggers further) expanded industrial production.

<sup>51</sup> Freshwater lakes often exhibit a huge phase transition from clear water to turbid water, as the lake passes a critical threshold of nutrient concentration to become locked into murkiness. To restore the water to its clear state, often ecologists must do more than simply reduce nutrient concentrations to below the critical threshold—they must push the nutrient level far below that threshold in order to bring the lake back to clarity. See Scheffer et al, *Catastrophic Shifts*, *infra* note x at 592.

<sup>52</sup> Shelly Lundberg and Richard Startz, *On the Persistence of Inequality*, 16 *J. Labor Econ.* 292, 317-18 (1998).

For example, to compensate for years of cumulative disadvantage triggered by underfunded public education, public schools may have to spend fifty times per currently segregated student the amount presently allocated in the average school.<sup>53</sup> Just as it takes a lot of heat to make a kettle boil, reversing cumulative disadvantage or self-reinforcing disparity might require shock therapy or a big push. Certainly, as between large but shorter term interventions, or smaller but longer term, policymakers should (perhaps counter-intuitively) choose the former.

In addition, timing is also critical. In technology markets characterized by increasing returns, market interventions make little difference in a market that has already become locked in, or is quite close to lock-in. However, interventions early in the formation of an industry can shift equilibria far more easily. What would have happened if the Freedman's Bureau, an agency set up to promote black self-sufficiency, had actually distributed the forty acres and a mule that they had promised to newly-emancipated slaves? Perhaps racialized wealth disparities might not have accumulated as dramatically as they did. Although the Freedmen's Bureau had pledged to divide up plantations and redistribute land, in most cases the agency never delivered. In other cases, the agency reclaimed the land for white growers almost as soon as the new black owners had signed the paperwork. Lacking the land and capital to farm, many newly-freed blacks became sharecroppers and tenant farmers, leaving them with no ownership of capital to speak of.<sup>54</sup> If the agency had made good on its promise, economist William Darity estimates that the value of that forty acres now would be worth \$1.5 million per black American.<sup>55</sup> (And that's not even counting the mule!)

The next chapter explores some potential policy prescriptions, both private and public, that might yet dismantle lock-in, assuming that lock-in does explain some significant portion of persistent racial inequality. For now, it is enough to recognize that in lock-in, timing is as important as magnitude.

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<sup>53</sup> Helen Ladd. Get cite.

<sup>54</sup> For original historical work on the Freedman's Bureau, see John Hope Franklin, *From Slavery to Freedom* 306-07 (1967); Eric Foner, *Reconstruction: America's Unfinished Revolution 1863-1877*, 70-71, 258-59 (1988); Claude F. Obre, *Forty Acres and a Mule: The Freedmen's Bureau and Black Land Ownership* (1978).

<sup>55</sup> William Darity, Jr, *Forty Acres and a Mule: Placing a Pricetag on Oppression in The Wealth of Races: The Present Value of Benefits from Past Injustices* (Richard F. America ed. 1990).